Economics Department

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# The Distribution of Enterprise Benefits in Russia and their Impact on Individuals' Well-Being

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**Abstract**

This study focuses on the formation of in-kind labour income in Russia, using 1994 data on individuals, and raises two questions, firstly about the distributive impact of social transfers from enterprises, and secondly about the effect of fringe benefits on individuals' well being, as captured in self-reported level of job satisfaction. The findings suggest that while social support at the work place in the form of health care remains fairly well equally distributed among employees, fringe benefits generally tend to be provided to the better-off. Social transfers from firms, along with cash wages, are also found to increase job satisfaction significantly. Moreover, the estimated levels of cash-wages necessary to compensate for the absence or the dismantling of enterprise benefits, in terms of employees' welfare, are considerable. In this light, the low level of job satisfaction observed in the data among Russian employees may well be explained by the recent decline in both cash-wages and fringe benefits.

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# 1 Introduction

Firms traditionally played a major role in the system of social support in Russia for both ideological and practical reasons. On the one hand, enterprises were by no means considered exclusively as organisations of production, but also as comprehensive social policy agencies. On the other hand, as firms were allocated a planned wage fund and as wage rates were defined for each occupation, provision of non-cash wages became an important tool used to manipulate relative earnings and to attach workers to the firm while avoiding the tariff wage system. In-kind transfers granted by firms were widespread and in general more extensive than is found in OECD countries. Employees commonly received important benefits such as housing, kindergartens, medical care, and access to recreational centres for adults and children.

The collapse of the Centrally Planned Economy and the introduction of market-oriented reforms has created new social needs that were not covered by Soviet social programs. Inefficiencies in enterprise-based social benefits have recently become a matter of concern (Commander & Jackman [10]). Is it frequently argued that traditional social protection at the work place is responsible for labour market rigidity and creates barriers to enterprise restructuring. Also, firms eager to cut social expenditure might be led to discriminate against high cost workers, such as women with young children. No less important is that redundant workers would lose access to social support, which would render the closure of inefficient firms politically unacceptable. In an attempt to deal with these shortfalls, a new system of social insurance was set up in 1991, in which the social role of the firm has been redefined. Delivery of social support is now shared between four extra-budgetary funds, several ministries and the local authorities, as well as the enterprises through legally mandated contributions and voluntarily provided benefits. At the same time, a legal framework was introduced to regulate the divestiture of enterprise social facilities.

As a consequence of the deep economic crisis, the living standards of the population have decreased significantly. While it has been establis-

hed that an important source of poverty in Russia is the depressed level of labour income (World Bank [45]) - in 1994, real wages still did not exceed 40% of their 1991 level - cash payments may not be a sufficient measure of the working population's well being and social transfers from firms need to be taken into account. In the current context, in which firms face harder budget constraints, and as the result of the closure or transfer of enterprise social assets, the share of employed individuals with access to social services at the work place is likely to have decreased significantly. However, the speed at which social services are dismantled is expected to vary according to the structure of preferences for different benefits. It appears that housing and pre-school education have been strongly affected by divestiture policy. At present, about half the housing stock previously controlled by firms has been transferred to municipalities (Commander & Schankerman,[11]). The situation for health care and recreational facilities is somewhat different. Empirical evidence (Commander & al [12], Mikhalev [32]) suggests that firms wish to keep these services despite the fact that employees are less dependent on enterprise medical facilities than they were on housing or kindergartens: in 1993, only 6% of all hospitals and 8% of all out-patient clinics were owned by enterprises (Mikhalev [32]).

The aim of this paper is to analyse the way enterprise social benefits have been distributed among the working population during the transition, and to look at their impact on workers' well being. It is my view that too little attention has been focused on these issues, which are important for several reasons. First, looking at the determinants of access to enterprise welfare at an advanced point of the transition could provide a basis for understanding further developments in the structure of compensation between cash wages and different types of benefits in Russia. Second, from an equity perspective, the question of how far social transfers from enterprises reduce income inequalitites rather than increase it needs to be addressed. Third, it is striking to see that the literature that exists on enterprise benefits in Former Socialist Countries hardly touches on the welfare implications of divestiture policies, when the extent to which workers are attached to nonpecuniary rewards may contribute to predicting employees' attitudes to changing enterprise be-

nefits and shed more light on the significance of these social transfers for workers' well-being.

The paper is organised as follows. Section 2 presents a conceptual framework designed to single out the determinants of fringe benefits in the Russian context, and to explore the extent to which non-cash wages may flatten the distribution of labour income. Section 3 develops a simple model where fringe benefits, along with cash-wages, are important determinants of labour allocation and happiness at work. This model is designed to yield information on the separate demand side and supply side effects on enterprise benefits. It generates a fringe benefit equation and a utility function in pecuniary and nonpecuniary wages to be estimated in Section 5. Section 4 describes the data used for the empirical analysis. Section 5 reviews the methodology adopted to estimate the fringe benefit equation and the indirect utility function derived from section 3. Section 6 summarises the most important results.

# 2 Conceptual framework

## 2.1 The determinants of fringe benefits

This section investigates the extent to which there may be a demand and supply for enterprise benefits in Russia during transition. On the one hand, it can be argued that the current existence of such benefits is mainly a Soviet legacy. Since employees generally prefer cash payments while employers are indifferent between the structure of compensation or may even favour cash wages, enterprise benefits are not justified by any economic rationality. Consequently, the provision of benefits by firms will probably cease. Against this, one can argue that workers may be willing to receive part of their remuneration package in the form of fringe benefits, while employers may wish to provide these benefits voluntarily. Thus, the current provision of enterprise benefits may partly reflect the distribution of employee and employer preferences, and the transition process will not lead to a complete abolition of social transfers from firms.

### 2.1.1 Employee preferences

It is a well-established result of the theory of choice that all other things being equal, employees prefer cash transfers rather than in-kind benefits of equal money value. Cash is the form of payment that gives the recipient the most options in maximising utility while in-kind payments are inherently more restrictive and act as a constraint imposed on consumer choice.

The restrictive nature of in-kind benefits can however be offset by several factors in such a way that they affect employee demand for in-kind benefits. A first reason generally put forward as an explanation for why employees may wish to receive fringe benefits through in-kind or deferred payment is that they enjoy a tax advantage over current payment[1]. However, the tax advantage in Russia seems to be weak. Marginal rates for personal income tax vary from 12% to 60%, but given the depressed wage levels and the underreporting of high earnings, personal income tax is generally paid at the minimum rate and does not significantly influence individuals' preferences for cash versus in-kind transfers. Inflation may also affect the demand for fringe benefits since if cash payments are not perfectly indexed, the real value of cash compensation depreciates compared with the value of benefits in kind. In Russia, indeed, in 1994 real wages still did not exceed 40% of their 1991 level [36]. Consequently, although constraining consumer choice, a form of in-kind payments may well be favoured by individuals as a way to protect their levels of consumption. There are other factors that might cause employees to prefer in-kind benefits rather than their equivalent in cash. Several services and goods provided by the firm may be inadequately covered by public or private markets. If shortages of consumption goods have almost disappeared with price liberalisation, there remains a considerable gap in the system of social support. In particular, since workers receive in general a much higher quality of health care in firm-held polyclinics and hospitals than in those held by municipalities, they may be unwilling to give up these services for higher cash wages.

[1] Woodbury (1983) provides evidence of the impact of tax regulation on the structure of workers' preferences in the US.

### 2.1.2 Employer preferences

The basic assumption in economic theory stipulates that employers are completely indifferent about the structure of total compensation. Firms do not care about whether they distribute cash payments or fringe benefits, but are concerned only with the size of the remuneration package. In the current context, with the hardening of budget constraints, firms may therefore be expected to reduce indifferently labour costs in cash and in-kind wages indifferently. But while cash wages may be gradually adjusted, cuts in fringe benefits may only be possible if the social assets used to provide these benefits are closed or divested, thus leading to the complete interruption of these benefits. Employers may also have preferences for cash rather than in-kind payments. The reasons for this are threefold. First of all, social benefits are generally awarded to current workers regardless of their actual hours of work. This may increase absenteeism or attract workers whose motivation is only to ensure continuing access to enterprise social services while concentrating their effort in other jobs. Second, provision of fringe benefits like medical facilities could reduce the firm's profitability by attracting workers with health problems. Third, since enterprise benefits in the form for instance of holiday homes or subsidised goods are of equal value to individuals with similar sized families, no matter how much they earn, their value corresponds to a higher percentage of low wage worker compensation. These benefits reduce the differentials in compensation between skilled and unskilled workers, so that skilled workers could be less likely to work for a firm providing benefits. Hence, according to this view, firms have no apparent reason to keep their social assets and unless the transfer of social assets is hindered by the financial capacity of local authorities, or unless the benefits provided arise out of collective bargaining[2], provision of social benefits is likely to be cut.

Alternatively, there may be several reasons why employers have incentives to provide fringe benefits rather than cash payments. It could

[2]Evidence of the impact of trade union on fringe benefits in the US can be found for example in Freeman [20].

be in the interest of the firm to increase the share of fringe benefits in the total remuneration package if the reduction in the cost of the wage exceeds the expenditures on the fringe itself and the average cost per capita of instituting the program if it is not yet installed. Such a situation can arise since in-kind wages allow employers to reduce payroll taxes or to avoid wage controls when the government tries to regulate wages to fight inflation. Currently in Russia there is an excess wage tax[3] and enterprises also pay several payroll taxes totalling 33% of the wage bill. However, evidence of the positive impact of the tariff wage system on fringe benefits has not been found either in Poland (Estrin & al [17]) or in Russia (Commander & al [12]). At the same time, the share of profits used for social purposes is exempt from taxes and several social services provided at the work place receive additional external funds[4]. Other reasons for firms to provide fringe benefits could result from high transaction costs for cash payments compared with in-kind wages, currently observed in the phenomena of wage arrears: cash constraints reduce sharply the employer's ability to distribute cash wages and result in delays or non-payment. Similarly, transfers in-kind may be less costly than cash for employers in the case of decreasing marginal costs for non-cash wage expenditures. Specifically, this can arise if fringe benefits are taken out of the firm's production[5], or when fringe benefits are obtained at discount prices.

Apart from cost incentives, social services from the enterprise can also be a way to achieve higher productivity, if employees place a high value on the benefits provided. It can also be a way to attract a certain kind of worker, whereas offering them higher wages might lead to charges of discrimination. For instance, employers that wish to hire and retain

[3]The excess wage tax treats average wages in excess of 6 times the minimum wage as profits and subject to the 35% profit tax. However, it should be abolished in 1996.

[4]As reported by Mikhalev [32], enterprise medical facilities get some funds from local health budgets and from regional funds for medical insurance. Similarly, recreational facilities are subsidised from the Social Insurance Fund and by Trade Unions. However, the additional sources of funds are not enough to maintain these facilities properly.

[5]For instance, a study realised by Brochier and Bonin [5] in a kolkhoze reports that a large share of employee compensation was in the form of goods and food produced locally.

a stable work force may wish to provide holiday homes and recreational camps to their workers and their families.

Finally, ethical reasons may also affect employer preferences in favour of social benefits. There is a long tradition of enterprise paternalism in Russia[6] and employers may wish to play an active role in the system of social support during the transition[7].

## 2.2 The distributive impact of enterprise benefits

The previous paragraph has discussed the extent to which the continuation of social transfers from firms during the transition period could be attributed to the Soviet legacy or whether a form of economic rationality could justify these non-wage benefits. The practical question raised now relates to equity considerations and leads to two hypotheses concerning the effect of enterprise subsidises on the distribution of labour income.

### 2.2.1 Fringe benefits as an equalising factor on labour income

In-kind transfers from enterprises may be expected to flatten the distribution of labour income for two mainly two reasons. On the one hand, if the goal pursued by employers when providing benefits is to support the living standards of employees, then access to these benefits would be granted regardless of individual productivity. Access to social services

[6]It is worth recalling here that enterprise paternalism is not specific to former socialist countries. Such behaviour was also observed in large companies in Europe in the XIX century, and in Japanese firms.

[7]Evidence of this phenomenon has been found in several empirical studies. Commander et al [12] report that a large proportion of managers interviewed in a large World Bank survey of firms cited social and ethical reasons for continuing the provision of benefits. In Rein & al [39], 79% of managers reported providing benefits to support the living standards of their employees. As also mentioned by De Montlibert [14], interviews carried out in Russian enterprises suggest roughly two kinds of managers. First, there were those concerned with the cost of social provision, who looked forward to the externalisation of social activities. They point to Western management methods and try to substitute in-kind benefits with cash wages. Very often, these attitudes make them unpopular among workers, highlighting preferences for some fringe benefits. The other type of managers seem more preoccupied with the stability of the labour force and its welfare, and try to avoid any social conflict in the firm.

may be open to all workers or even targeted on specific groups, according to needs, as is the case for allocation of public social support. Access would be independent of personal characteristics that typically affect wages (Human Capital, Signalling theories). The share of social transfers in total labour compensation would then have an equalising effect on the distribution of earnings.

On the other hand, firms that do not provide benefits may be obliged to distribute higher cash wages, this being the implicit root of the compensating wage differential hypothesis. Consequently, low paid employees could be expected to receive more benefits.

### 2.2.2 In-kind wages as a source of income inequality

In-kind wages may alternatively tend to increase wage inequalities. First of all, given the deep economic crisis prevailing in Russia and the existence of segmented labour markets, workers may have little opportunity to change jobs. In this case, compensating wage mechanisms would not occur. There may be a form of economic dualism, and workers from equal backgrounds and of equal ability may receive different amounts of both money wages and nonmonetary compensation because of their location in different firms or economic sectors. Such a phenomenom is observed in Russia, where a few large formerly state-owned firms, in profitable sectors, with considerable market power and easy access to various funds, are able to pursue a range of objectives that are not available to other firms[8]. In the former, employees may still access several social benefits along with relatively high cash wages, while in the latter, the presence of hard budget constraints would constrain the level of wages, both in cash and in kind.

There are other reasons why in-kind transfers from enterprises may be a source of income inequality. Transparency in the criteria used for allocation of fringe benefits at the work place can be questioned. It is possible that the size of compensation, both in cash and in kind, depends

[8]For instance, evidence from aggregated data (Sotsialnie-ekonomitcheskoe polojenie Rossi, Goskomstat, Jan-Nov 1994) show that the average social expenditures spent on an employee in the gas sector were ten times bigger than the ones received by an employee in science.

on the position of the individual in the firm's structure of power. Survey evidence [1] supports a form of labour segmentation even within firms and tends to indicate that the privatisation program has created a perverse governance structure, which only serves to strengthen the position of special interest groups in exploiting the firm's assets, including social welfare.

# 3 Modelling the access to enterprise welfare and workers' well-being

## 3.1 A model of job selection

This section incorporates fringe benefits in a simple model[9] which considers the problem of choice on the part of workers and firms, facing a given wage-benefits ratio, in a scenario in which both employees and employers vary in their preferences for pecuniary and nonpecuniary rewards. Enterprise benefits, together with cash wages, appear to be important determinants of job choice, and the matching process described below is shown to generate a fringe benefit equation to be estimated in section 5.

### 3.1.1 Workers' choice

Consider a worker $i$ whose dilemma is to select a specific job $j$ among $J$ jobs that vary with respect to monetary and non-monetary characteristics. In all jobs, the hours of work for each worker are equal and prescribed by the employer[10]. It can safely be assumed that each worker cares both about monetary and non monetary rewards from a job. Nonpecuniary benefits are supposed to be objective and measurable, in the sense that everyone would agree on the quantity of benefits a job provides, even if individuals differ in their preferences for the bundle of wage/non-wage job characteristics. For simplicity, let us assume that

[9]The general approach is developed by Lucas[29].

[10]I do not consider the decision to supply a given number of hours of work, since generally fringe benefits are awarded regardless of the length of work. In addition, it is implicitly assumed that the levels of wage offer, both in-cash and in-kind, are above individuals' reservation levels.

those preferences are partially determined by a vector of measured personal characteristics $A_i$ and by other individual specific attributes that are not observed $\alpha_i$. One's total compensation, both in cash and in kind, is assumed to depend on human capital variables - not everybody is offered the same remuneration package for any given job - and on the characteristics of the job actually chosen. The total compensation offered to worker $i$ can then be written as $w_{ij} + z_{ij}$, where $w_{ij}$ is the real monthly cash wage, and $z_{ij}$ is the money value of a composite good representing all the fringe benefits offered. Each worker's utility from a given job $j$ is then a function of the wage offered, the value of fringe benefits, and the individual preferences represented by both observed and unobserved taste related components:

$$U_{ij} = U(w_{ij}, z_{ij}; A_i, \alpha_i) \qquad all \quad i, j \tag{1}$$

Assuming that individuals take pecuniary and nonpecuniary pay between jobs as given, each worker will choose the job that provides him with the highest utility. In other words, the worker will weigh up the monetary and non monetary characteristics of each job and will compare the utilities attainable in these different jobs. This choice problem is illustrated graphically in Figure 1a in the Appendix. Assuming a continuum of job offers, workers have to choose from a set of jobs bounded by a frontier of job offers such as (JJ)[11]. Worker i's utility is maximised at the point where the indifference curve is tangential to the offer curve. This results in equating the marginal rates of substitution between the monthly real wage offered to worker i and the value of fringe benefits with the ratio of their shadow prices. These conditions provide a set of supply functions for each worker i:

$$\Theta^s_{ij} = \Theta((w^i_1, ..., w^i_j, ...w^i_J), (z^i_1, ..., z^i_j, ..., z^i_J); A_i, \alpha_i) \tag{2}$$

where

$$\begin{aligned} \Theta^s_{ij} &= 1 \quad \text{if worker } i \text{ selects job } j \\ &= 0 \quad \text{otherwise} \end{aligned}$$

[11]The offer curve may not look as the one depicted in Figure 1a, however. It will slope downward under the assumption that employers providing higher fringe benefits have to reduce cash wages in order to remain competitive

for $i = 1, \ldots I$ and $j = 1 \ldots J$. The decision of worker $i$ to choose job $j$ depends on the level of the real wage and the extent of fringe benefits provided in job $j$ compared with monetary and non monetary benefits that could be received in other jobs, and on the way worker $i$ values the differential in pay, both in cash and in kind, between jobs. Note that the set of job offers $J$ may be *small*, so that workers may be strongly constrained in their choice of the desired wage-benefit ratio.

### 3.1.2 Enterprise choices

On the other side, the employer in job $j$ faces a wage/benefit trade-off[12] and has to decide whether to hire, and which type of worker to hire. For simplicity, let us assume that both decisions are simultaneous. To each job $j$ corresponds a global remuneration package per capita in the form of fringe benefits $z_{ij}$ and the monthly wage offer $w_{ij}$ that depends both on the personal characteristics of worker $i$ (Human capital, Signalling theories) and on the characteristics of job $j$. Holding other things constant, the net profit of firm $j$ generated by worker $i$ can safely be assumed to be a function of the total labour compensation in the form of fringe benefits and wage offered to worker type $i$. Moreover, it may safely be supposed that the net profit generated by worker $i$ will vary across jobs, depending on other characteristics specific to the job, whether observed $B_j$ or not $\beta_j$[13]. Thus:

$$\Pi_{ij} = \Pi(w_{ij}, z_{ij}; B_j, \beta_j) \qquad all \quad i, j \tag{3}$$

The problem of each employer in job $j$ is then to offer a wage/benefit mix that maximises (3), while being potentially acceptable by employees. Graphically, in figure 1b, the set of acceptable levels of wages and fringe benefits are represented by the actual job offers made by all firms (JJ), and correspond to an envelope of zero-profit curves for all jobs. Each employer has to choose the structure of the remuneration package from a set of wages and fringe benefits bounded by a function of feasible job

[12] This derives from the assumption that to remain competitive, a firm that provides large benefits must reduce wages. Similarly, a firm that provides no benefits should provide higher cash wages to attract workers.

[13] Identical workers would generate higher productivity in work where their individual characteristics better fit the job characteristics.

offers. The net profit generated by a worker when in job $j$ is maximised at the point where the isoprofit curve is tangential to the efficiency frontier. This condition provides a set of demand functions for each employer in job $j$:

$$\Theta_{ij}^{d} = \Theta((w_j^1, \ldots, w_j^i, \ldots, w_j^I), (z_j^1, \ldots, z_j^i, \ldots, z_j^I; B_j, \beta_j) \tag{4}$$

where

$$\begin{aligned} \Theta_{ij}^{d} &= 1 \quad \text{if the employer in job } j \text{ wishes to hire worker } i \\ &= 0 \quad \text{otherwise} \end{aligned}$$

The willingness of the employer in job $j$ to hire worker $i$ will depend on the absolute level of labour compensation both in the form of cash wages and fringe benefits, and on the relative level of cash wages he will have to pay to $i$ compared with the ones he could have paid to other types of workers.

### 3.1.3 The matching process

The observed relation between enterprise benefits and wages is determined in such a way that the demand for and supply of different kinds of jobs and workers are matched correctly, as depicted in Figure 1c. In other words, an agreement is reached when the decision of worker $i$ to select job $j$ fits the desire of firm $j$ to hire worker $i$:

$$\Theta_{ij}^{d} = \Theta_{ij}^{s} \tag{5}$$

This condition provides a reduced form for the fringe benefits equation:

$$z_{ij} = z(w_{ij}; A_i, B_j, \alpha_i, \beta_j) \qquad all \quad i, j \tag{6}$$

The actual fringe benefits received by worker $i$ from job $j$ depend on the real wage received by worker $i$ and on a set of characteristics specific to worker $i$ and to job $j$. Equation (6) is to be estimated in Section 5.

## 3.2 Fringe benefits and happiness at work

Let us consider the intuitive "total" utility function of an individual $V$ as the one proposed by Clark and Oswald [13]. This utility may be written as:

$$V = V(U_w, U_{nw}) \tag{7}$$

where $U_w$ is the instantaneous utility from work and $U_{nw}$ is the utility associated with other aspects of the individuals' life. While $U_{nw}$ might be expected to depend on such factors such as family life, friendships, and other variables that are unobserved by economists, $U_w$ reflects the level of well-being that a working individual receives from all aspects of his job.

As found in many textbooks in economics, $U_w$ is generally[14] assumed to depend on labour income $w_{ij}$, non-pecuniary characteristics of the job performed, including fringe benefits $z_{ij}$ and other job parameters $D_j$ , and on a set of personal characteristics that affect the way workers feel towards their job $A_i$. This utility can then be written as:

$$U_w = U(w_{ij}, z_{ij}, D_j; A_i). \tag{8}$$

Further, if job satisfaction at a given moment is a measure of instantaneous utility, and assuming that preferences are additively separable, we can adopt the following specification for job satisfaction:

$$U_w = u_1(w_{ij}) + u_2(z_{ij}) + u_3(A_i) + u_4(D_j) \tag{9}$$

Estimation of equation (9) will be performed in Section 4 and will provide estimates of the impact of pecuniary and nonpecuniary benefits on individual's welfare at a given point in the transition.

[14] My intention is not to test the various models of job satisfaction proposed in the literature, nor whether utility from work depends on absolute or relative income. The utility function choosen here is conventional in the sens that it depends on the absolute level of labour compensation, and it was not rejected by the data.

# 4 The data

## 4.1 Sample design

The data source for the empirical analysis is drawn from a survey of 2959 individuals conducted by the Russian Centre for Public Opinion Research (VCIOM). Estimation was conducted only on the sub-sample composed by the employed individuals, which after cleaning of the data[15], reduces the sub-sample size to 1256 individuals. It is also worth noting here that large scale independent surveys have been permissible in Russia since 1989, and to my knowledge, the Russian Centre for Public Opinion Research is, with the National Statistical Agency (Goskomstat), the only organisation that provides representative samples of the Russian population. The survey was undertaken in September 1994, three years after price liberalisation, and when the process of market oriented reforms such as the privatisation program had been further advanced.

The survey has the advantage that it contains the information required to estimate equations (6) and (7). The data provide observations on earnings in August 1994 (monthly wage in main job net of tax, family income), social benefits received from the work place in the 6 months preceding the survey (access to social facilities, subsidised goods and other social transfers in kind), individual socio-economic characteristics (age, gender, education, occupation) and job characteristics (sector, firms' ownership and size). Other information includes the reported subjective level of job satisfaction as appraised on a scale from 1 to 4, wage arrears, employment expectations, the prevailing atmosphere within the firm, labour hoarding and geographical location.

The survey is intended to be representative of the whole Russian adult population, aged 16 and above, urban and rural, and covers the entire Russian Federation stratified into 15 regions. The questionnaire

[15]The sub sample size was reduced by the necessity of discarding individuals for which some observations were missing. Given that non-response rates were higher among less educated workers, the sub-sample used for the analysis tends to overstate high educated workers.

was filled out through personal interviews, and representativeness of the respondents is compared in Table 1 with characteristics of total Russian population as recorded in the Russian Census of 1989. The sample exhibits a good fit for age and urban/rural division, though women are slightly over-represented.

**Table 1: Representativeness of the whole sample**

| | VCIOM data[1] (%) | Census data[2] (%) |
|---|---|---|
| Gender: | | |
| men | 40 (38-41) | 45 |
| women | 59 (58-61) | 55 |
| Age: | | |
| 16-19 | 6 (5-7) | 7 |
| 20-24 | 10 (8-11) | 9 |
| 25-39 | 33 (31-35) | 33 |
| 40-54 | 27 (26-29) | 23 |
| > 55 | 24 (23-26) | 28 |
| Place of residence: | | |
| urban areas | 74 (72-75) | 73 |
| rural areas | 26 (24-28) | 27 |

*Note:* [1] *Whole sample size. Confidence interval at the 95% level for the sample proportions are reported in brackets.* [2] *As reported in Boeva, 1993.*

The survey does have some disadvantages, however. Table 2 shows that compared with aggregate data, the sub-sample of employed individuals seems to overstate the size of some sectors like trade, services, health and education. Since the extent of enterprise benefits in these sectors was smaller in the Soviet period, estimates of the proportion of the working population receiving social services from the enterprise is likely to be understated. Moreover, although the sample contains interesting information concerning the contribution of enterprises on individuals' welfare, it could have been more comprehensive . Important observations on seniority were not available. Finally, the survey suffers from

a relatively small sample size when the number of individuals receiving enterprise benefits is disaggregated into sub-samples.

**Table 2: Working population by branch of employment in 1994**

| Sectors | Sample data (%) | Aggregated data (%) |
|---|---|---|
| Industry, construction, transport | 39.9 | 42.9 |
| Agriculture, forestry, hunting | 12 | 14 |
| Trade, services | 15.8 | 11.3 |
| Education, health, culture, science, arts | 23.4 | 15.6 |
| Banking, insurance, government administration | 3.4 | 5.4 |
| Total | 100 | 100 |

*Source: Centre for Economic Analysis for aggregated data.*
*VCIOM sub-sample of 1256 employed individuals for sample data.*

## 4.2 Fringe benefits and wage data

Table 3 summarises the sample's data on non-wage benefits received by the employees in the 6 months preceeding the survey. The figures reveal that at the end of 1994, 9.2% of all surveyed employees were receiving medical services from their firm; 6.6%, access to recreation centres for adult and children; 5.1%, education and training; and 2.8%, housing. Other fringe benefits received from the work place were cheap meals, 9.2%; provision of subsidised food and other goods, 9.2%; and other welfare transfers in-kind, such as funeral expenses, cheap credit, or transportation subsidies, 12.6%. The number of benefits received given in the bottom of the table provides an idea, although imperfect, of the extent of social benefits received. It shows in particular that 37% of the working population was covered by one or more enterprise benefits, though a small fraction of them was receiving two or more benefits. The quality of the data on nonpecuniary benefits raises some problems, however. Reported access to enterprise benefits, though not evaluated in money terms, may be misleading. Employees, for instance, may not be aware of the extent to which several goods or services are actually subsidised by the enterprise and they may understate the real provision of benefits.

**Table 3: Enterprise support received by the employees**

| | Number of surveyed individuals | Share of surveyed employed individuals |
|---|---|---|
| Type of social benefits received from the firm: | | |
| housing | 35 | 2.8 |
| medical care | 115 | 9.2 |
| recreation centres for adults and children | 83 | 6.6 |
| free or subsidised meals | 88 | 7 |
| subsidised food and other goods | 115 | 9.2 |
| education and training | 64 | 5.1 |
| Other welfare transfers in-kind | 158 | 12.6 |
| Number of benefits received: | | |
| 0 | 784 | 62.4 |
| 1 | 343 | 27.3 |
| 2 | 83 | 6.6 |
| 3 and more | 46 | 3.7 |

*Source: September 94 VCIOM survey on 1256 employed individuals.*

Table 4 displays summary statistics on the extent of fringe benefits by industry. The sample data suggests relatively large sectoral disparities in the average number of benefits received and, to some extent, fits well with aggregated data on average enterprise social expenditures per capita. For example, the data show that both the mean benefits and the average social expenditures per employee were markedly higher in the banking sector - an extremely rapidly expanding area of new enterprises - than elsewhere. However, in agriculture, while the number of benefits received were on average in the upper tail of the distribution, the average social expenditures were extremely low. This shows the difficulties of estimating the social wage enjoyed by individuals. On the one hand, the number of benefits received provide an imperfect measure of the size of fringe benefits because for example, three benefits can have a lower value (objective or subjective) than one benefit. On the other hand, looking at enterprise social expenditures tells us little about the real distribution of benefits across employees, since they may be unequally distributed even within firms. Moreover, accurately measuring social expenditures is cumbersome, especially in transitional countries, where several payments

in kind, such as food and goods, may appear as production costs for the firms which produce them.

**Table 4: Enterprise social benefits by industries**

| | VCIOM data | Aggregated data | |
|---|---|---|---|
| | Average number of benefits | Av. social expenditures per capita | % of monthly wage |
| Industry, construction, transport | 0.52 | 27.29 | 7.83 |
| Agriculture, forestry, hunting | 0.59 | 7.5 | 5.5 |
| Trade, services | 0.56 | 28.7 | 9.8 |
| Education, health, culture, science, arts | 0.46 | 12.2 | 6.5 |
| Banking, insurance, government administration | 0.95 | 93.8 | 23.3 |

*Note: aggregated data are given in Sotsialnie-ekonomitckoe polojenie Rossii. Goskomstat, and relate to October 1994. The social expenditures are in thousand of roubles.*

The distribution of the different social services received from the firm across wage quartiles is given in Table 5. Important dispersions are observed, especially for paid recreation centres, cheap meals, and education programs, for which access is concentrated in the top two quartiles. In particular, access to cheap meals embraced more than 35% of the 25% richest individuals and less than 19% of the 25% poorest. Alternatively, enterprise housing accommodation peaked in the bottom of the wage distribution. However, as for reported enterprise benefits, and given the problem of wage arrears, the monthly wages collected in the survey may be subject to measurement errors. Reported monthly wages may be overstated if respondents appraised the wage they should have earned instead of their actual wage[16].

[16] This was obvious for example in a few observations, where individuals reported a positive monthly wage while at the same time answering that their last monthly wage (the one they had to appraise) was not paid at all.

**Table 5: Distribution of benefits by wage quartile (% of surveyed individuals)**

| | First quartile (<90) | Second quartile (90-150) | Third quartile (150-250) | Fourth quartile (>250) | Total |
|---|---|---|---|---|---|
| Housing | 31.4 | 20 | 25.6 | 23 | 100 |
| Medical care | 20.9 | 22.6 | 27.8 | 28.7 | 100 |
| Recreation centres for adults and children | 10.8 | 14.5 | 32.5 | 42.2 | 100 |
| Free or subsidised meals | 18.2 | 13.6 | 32.9 | 35.3 | 100 |
| Subsidised food and other goods | 21.7 | 26.1 | 18.3 | 33.9 | 100 |
| Education and training | 15.6 | 12.5 | 37.5 | 34.4 | 100 |
| Other welfare transfers in-kind | 20.3 | 24 | 22.1 | 33.6 | 100 |

*Note: the values for wage quartile are in thousands of Rubles*

To place access to enterprise benefits in a dynamic context, Table 5 reports the share of surveyed employed individuals receiving these benefits in September 1994, compared with data from a similar VCIOM survey on a different sample for August 1993. The data show that the share of surveyed individuals reporting access to enterprise housing and medical care dropped significantly, by 18 and 22 percent respectively[17]. This could result from the divestiture of enterprise housing and medical facilities. However, as reported in the same table, the sharp decline in reported access to housing and health care is striking since it is not observed in the large World Bank enterprise survey. In fact, according to these data, the share of enterprises providing new housing and medical services remained stable, and even increased for food and consumer goods[18]. Part of the story could be that individuals tend to underreport the benefits received from the work place, presumably because they may not be aware of the extent to which the benefits provided are subsidised by the firm or charged at full cost. Alternatively, firms may overstate the provision of fringe benefits when reporting social assets which may in fact have been abandoned or available only to specific workers. Moreover, the World bank survey was restricted to industrial firms and small firms, in which employees are likely to receive less benefits, were underrepresented.

[17] On the basis of confidence intervals at the 95% level for the sample proportion.

[18] The data refer to the same firms pre and post transition.

**Table 6: Changes in enterprise social benefits**

| | Individual survey (% of individuals) | | Enterprise survey (% of firms) | |
|---|---|---|---|---|
| | August 93 | September 94 | Pre-reform (91) | Mid-94 |
| Housing | 21 | 2.8 | 59 | 55 |
| Medical care | 31 | 9.2 | 71 | 70 |
| Recreation centres for adults and children | - | 6.6 | 57 | 45 |
| Free or subsidised meals | 9 | 7 | 83 | 78 |
| Subsidised food and other goods | 13 | 9.2 | 52 | 60 |
| Education and training | 4 | 5.1 | - | - |
| Other welfare transfers in-kind | 12 | 12.6 | - | - |

*Note: Enterprise evidence was collected from a World Bank survey on 439 industrial firms and results are reported in Commander et al [12].*

## 4.3 The self-reported level of job satisfaction

Assessing the impact of social benefits on workers' well-being is made possible with the VCIOM data, where employees were asked to appraise on a scale of 1 to 4 the extent to which they were satisfied with their job in their day to day life. Thus, the questionnaire provides self-reported levels of satisfaction from work which are considered as proxy utility data. However, the data are hardly a perfect representation of the real level of workers' well-being. They are measured on an ordinal scale and may be subject to large measurement error.

Table 7 shows that of the total replies, 47.8% answered that they were very dissatisfied; 40.1%, fairly dissatisfied; 8.9%, fairly satisfied; and 3.2%, very satisfied. These figures contrast sharply with standard results from Western countries where a large majority of workers report a high level of job satisfaction[19]. This is not surprising given the large fall in real wages and in access to social services at the work place observed in Russia since the beginning of the transition. Also, the self-reported level of job "disatisfaction" may reflect a deep disequilibrium in the Russian labour market, where disatisfied workers are generally unable to find another job that fits their own preferences more closely.

[19]For instance, in the Canadian data analysed by Levy-Garboua and Montmarquette [28], more than 90% of surveyed employed individuals were rather or fully satisfied. The same pattern is observed by Clark and Oswald [13] in the British Household Panel Study.

**Table 7: Self-reported level of job satisfaction**

| | Number of surveyed individuals | Share of surveyed employed individuals |
|---|---|---|
| Subjective level of job satisfaction: | | |
| very dissatisfied | 601 | 47.8 |
| fairly dissatisfied | 503 | 40.1 |
| fairly satisfied | 112 | 8.9 |
| very satisfied | 40 | 3.2 |

*Source: September 94 VCIOM survey on 1256 employed individuals.*

The other characteristics of the sample's data used or proven to be significant in the econometric analysis are summarised in Table 8. As well as mean values, the table provides a detailed description of the variables used in estimation.

**Table 8: Description of the variables used in estimation**

| Variables | Description | Mean |
|---|---|---|
| **Income variables:** | | |
| Monthly wage | Monthly wage in thousands roubles at the main job after tax (excluding pensions, bonuses, welfare payments) | 206 |
| Wage square | Monthly wage square | 83386 |
| Other income | Total monthly household income minus wages from main and second job of respondent | 224 |
| Wage arrears | =1 if the respondent did not received his/her wage from the main job fully or completely | 0.54 |
| **Personal characteristics:** | | |
| Age | The age in years of the respondent | 39.2 |
| Number of adults | The number of adult age 16 and above living in the household | 2.51 |
| Number of children | The number of children age 15 or less living in the household | 0.85 |
| Women | =1 if the respondent is a female employee | 0.59 |
| Married | =1 if respondent is married or co-habitating | 0.63 |
| Divorced | =1 if respondent is divorced or widowed | 0.18 |
| Single | =1 if respondent is single | 0.19 |
| Slavic | =1 if respondent is ethnic Russian, Ukrainien, or Bielorussian | 0.89 |
| Primary education | =1 if respondent has a primary education | 0.01 |
| Secondary education | =1 if respondent has a secondary education | 0.18 |
| Technical education | =1 if respondent has a technical education | 0.14 |
| High technical education | =1 if respondent has a high technical education | 0.31 |
| Graduate | =1 if respondent has a graduate education | 0.36 |
| **Occupation:** | | |
| Managers | =1 if respondent is a top or middle manager | 0.12 |
| Technical professionals | =1 if respondent works as a technical professional worker | 0.14 |
| Non-technical professionals | =1 if respondent works as a non-technical professional worker | 0.13 |
| Technical office-worker | =1 if respondent works as a technical office-worker | 0.11 |
| Non-technical office worker | =1 if respondent works as a non-technical office worker | 0.09 |
| Skilled workers | =1 if respondent works as a skilled worker worker | 0.33 |
| Unskilled workers | =1 if respondent works as an unskilled worker | 0.08 |
| **Enterprise characteristics:** | | |
| Small firm | =1 if respondent is employed in a firm with less than 20 employees | 0.20 |
| Medium firm | =1 if respondent is employed in a firm with 21-500 employees | 0.52 |
| Large firm | =1 if respondent is employed in a firm with more than 500 employees | 0.28 |
| State enterprise | =1 if respondent works in a state enterprise or organisation | 0.55 |
| Lease/Joint stock state enterprise | =1 if respondent works in a state lease or state joint stock enterprise | 0.23 |
| Collective farm | =1 if respondent works in a collective farm | 0.03 |
| Privatised enterprise: | =1 if respondent works in a non-state joint stock company or in a worker controlled firm | 0.07 |
| Firm sold to workers | =1 if part of the property belongs to workers, with or without the right to vote | 0.01 |
| Non-state joint stock company | =1 if respondent works in a non-state joint stock enterprise | 0.05 |
| New private firm | =1 if respondent works in a new private enterprise, including joint venture | 0.10 |

Table 8: Continued

| Variables | Description | Mean |
|---|---|---|
| **Industries:** | | |
| Industry | =1 if respondent works in industry, transport, construction | 0.43 |
| Agriculture | =1 if respondent works in agriculture | 0.12 |
| Trade/Services | =1 if respondent works in trade, services, food distribution | 0.16 |
| Health/Education | =1 if respondent works in health, education, culture | 0.26 |
| Banking/insurance | =1 if respondent works in banking, insurance, government administration | 0.03 |
| **Other job characteristics:** | | |
| Labour hoarding | =1 if respondent has experienced a period of unpaid leave because of an absence of work in the firm | 10.176 |
| Conflicts with employers | =1 if respondent answered that conflicts between employees and employers arised very often in the at his/her work place last months | 0.058 |
| Conflicts among employees | =1 if respondent answered that conflicts among employees arised very often at his/her work place in the last months | 0.027 |
| Job opportunities | =1 if respondent answered he/she was likely to find an other job in the same speciality in case he/she would loose the job | 0.52 |
| Unemployment expectation | =1 if respondent expect to loose his job soon | 0.40 |
| Employee power | =1 if the respondent works in a firm where the effective power belongs to the collective of workers | 0.058 |
| **Geographical variables:** | | |
| Rural resident | =1 if respondent resides in a rural areas (¡5000 inhabitants) | 0.26 |
| Urban resident: | =1 if respondent resides in a urban areas | 0.64 |
| Big city | =1 if respondent resides in a big city (¿200.000 inhabitants) | 0.28 |
| Small city | =1 if respondent resides in a small city (5000-200.000) | 0.36 |
| Capital resident | =1 if respondent resides in Moscow or St-Petersburg | 0.10 |
| North | =1 if respondent lives in this region | 0.35 |
| South | =1 if respondent lives in this region | 0.22 |
| Ural/Pre-Ural | =1 if respondent lives in this region | 0.20 |
| Sibiria/Fareast | =1 if respondent lives in this region | 0.23 |

# 5 Econometric issues

This section presents the methodology adopted to estimate the reduced form outcome of the fringe benefit setting process (equation (6)) as well as the utility function generated by pecuniary and nonpecuniary benefits received from the work place (equation (8)) and introduced in Section 3. Estimation of equation (6) will single out the factors that actually determine access to fringe benefits and will allow us to quantify the effects of such variables on access to enterprise welfare. In turn, estimation of equation (8) will identify and measure the impact of wage and nonpecuniary rewards on employees' well being at a given moment in the transition, while providing a basis for understanding and predicting worker responses to changing enterprise benefits.

## 5.1 Estimating the access to enterprise benefits

Let $b^*_{ki}$ be the latent unobserved variable corresponding to the value of a given benefit $k$ received by worker $i$. The model is built around the following latent regression:

$$b^*_{ki} = \beta X_{ki} + \epsilon_{ki} \tag{10}$$

for $k = 1, \ldots, 7$, $i = 1, \ldots, 1256$, where $\beta X$ is known as the index function, $X$ being the set of explanatory variables including characteristics specific to the individual and the job performed, $\beta$ the set of parameters, and $\epsilon$ an error term with $E(\epsilon) = 0$ and $Var(\epsilon) = \sigma^2$. In the data, $b^*_{ki}$ is not observed, but we observe the binary variable $b_{ki}$ as follows:

$$\begin{aligned} b_{ki} &= 1 \quad \text{if} \quad b^*_{ki} > 0 \\ b_{ki} &= 0 \quad \text{if} \quad b^*_{ki} = 0 \end{aligned}$$

That is, we observe whether respondent $i$ received benefit $k$ ($b_{ki} = 1$) or not ($b_{ki} = 0$). Then,

$$\begin{aligned} \Pr(b_k = 1) &= \Pr(b^*_k > 0) \\ &= \Pr(\epsilon_k > -X\beta) \\ &= F(X\beta) \end{aligned}$$

where $F(.)$ is a symmetric cumulative distribution function, with $F(-\infty) = 0$ and $F(+\infty) = 1$. What we need is a suitable functional form for $F$. For convenience, $\epsilon$ is assumed to follow a logistic distribution and this refers to a logit model, though assuming the normal distribution seems to make little difference [22]. Hence, we get

$$\Pr(b_k = 1) = \Lambda(X\beta) \tag{11}$$

$$= \frac{\exp X\beta}{1 + \exp X\beta} \tag{12}$$

where $\Lambda$ is the cumulative logistic distribution. Estimates of the marginal impact of $X$ on $b$ is then derived from this distribution and we have:

$$\frac{\partial \Pr(b_k = 1)}{\partial X_m} = \Lambda(X\beta)(1 - \Lambda(X\beta))\beta_m \tag{13}$$

Potential problems with this model are threefold. Firstly, almost all the sampled benefits received by the individuals are positively and

significantly associated with access to other social services[20]. With the exception of access to enterprise housing accommodation, which was not significantly correlated with the provision of any other benefits, more than 50% of employees receiving a benefit were also receiving one or two other benefits. Consequently the coefficients obtained when running the different logit equations independently may not be fully efficient, although they remain consistent[21]. Secondly, as the share of individuals provided with benefits in the sample is small, estimates of access to only one type of benefit give quite large standard errors. Thirdly, the distribution of enterprise benefits observed in the data is presumably the outcome of a matching process. Consequently, it can be difficult to discern the extent to which disparities found in the distribution of fringe benefits are a-priori a consequence of demand or supply side forces.

The choice of the variable included in the vector $X$ will follow the earlier discussion on the determinants of fringe benefits. The variables included in the regression that may affect the demand for benefits are as follows:

- *Family size*, both through the number of adults age 16 and above and through the number of dependent children age 15 or less. These variables could affect positively workers' preferences for social services at the work place when access to benefits is extended to the whole family;

- *Age and Gender*, since older workers and women are more likely to favour fringe benefits, especially when the social services provided cover insurable risks, such as disease;

- *Other income*, other than wages (from first or second job) of the respondent. Richer individuals may favour nonpecuniary benefits as a way to avoid taxes;

- *Education*, since generally benefits are provided regardless of the level of education. This reduces the differentials in total compensation between educated and less educated workers and may make more educated workers less willing to work for a firm providing benefits.

Other variables that control for supply side effects are:

[20] Independence tests were performed between each benefit on the basis of the $\chi^2$ statistic.

[21] Logit estimates for the access to each sample benefits run separately do not use the information contained in the covariance between the error terms.

• *Wage*, a negative coefficient being expected if the compensating hypothesis is correct, while a positive coefficient would be evidence for a form of economic dualism.

• *Professional status*, both because of the possible returns to specific occupation in the form of benefits and because access to various fringe benefits may well depend on the position of the individual in the firm structure of power;

• *Governance structure* of the firm the employees were working for, which could capture both the extent of employee bargaining power and possible access to state subsidises. These may affect the size of compensation positively, and in particular the extent of fringe benefits if this is the preferred form of remuneration;

• *Industries*, to control for possible substitution effects between firms' production and wages, and because of the possible concentration of profitable activity in some sectors;

• *Size of establishment*; entered to control for various differences, including the extent of the internal labour market and the possibility of spreading the costs of fixed social expenditures and of obtaining discount prices for benefits;

• *Wage arrears* - a dummy variable for whether employees received their wage completely or on time, since liquidity problems could induce employers to substitute cash by in-kind payments. However, this variable may also proxy the financial health of the firm and hence be negatively associated with social rewards.

Finally, several variables may affect both demand and supply:

• *Age, Gender, and Family size*, since on the one hand, employers that provide social benefits may wish to target support on specific groups according to their needs, thus using social criteria for allocating benefits. On the other hand, if these social services are not voluntarily provided, but result from collective bargaining and/or from the Soviet legacy, the firm may wish to cut back on labour costs by discriminating against workers that can be identified as having a higher probability of using these services;

• *Regions and Urban/Rural locations*, to control for various differences, such as the rapid process of decentralisation in Russia that may affect differently the attitude of local authorities towards the divestiture of enterprise social assets, the persistence of barter economies in

rural areas, and the more rapid development of markets in Moscow and St-Petersburg, which could influence both employee and employer preferences for retaining large social benefits at the work place.

## 5.2 Estimating the reported level of job satisfaction

Let individual i's utility from working in job $j$ (equation (8)) be given by the additively separable indirect utility function:

$$U_{ij} = \alpha W_i + \beta \sum_{k=1}^{7} b_{ki} + \gamma Z_i + \delta D_j + \epsilon_i \qquad (14)$$

where $W$ is the observed monthly wage, $b_k s$ are (0,1) dummies equal to one if the benefit $k$ is received, $Z_i$ and $D_j$ are respectively a set of individual and job specific parameters expected to affect job satisfaction (to be made precise later), and $\epsilon$ is an error term with $E(\epsilon) = 0$ and $Var(\epsilon) = \sigma^2$. An immediate problem that arises in estimating (13) is the fact that the real level of satisfaction $U_i$ enjoyed by worker $i$ from his job $j$ is not observed. What we do observe is the reported level of satisfaction with the job $S_i$, as appraised by the individuals on a scale of 1 to 4. However, the self-reported level of job satisfaction may be thought of as a proxy for the underlying utility from work (8). Since this variable is of count form and of an ordinal nature, it seems reasonably appropriate [7] to estimate equation (12), using an ordered logit model. In such a model, the observed ordinal satisfaction $S_i$ is related to $U_i$ by a set of cut-off points such that:

$$\begin{aligned} S_i &= 1 \quad \text{if} \quad c_0 \leq U_i < c_1 \\ &= 2 \quad \text{if} \quad c_1 \leq U_i < c_2 \\ &= 3 \quad \text{if} \quad c_2 \leq U_i < c_3 \\ &= 4 \quad \text{if} \quad c_3 \leq U_i < c_4 \end{aligned}$$

where $c_j$ are to be estimated with $\beta$. By assumption, $c_0$ is taken as $-\infty$ and $c_4$ is taken as $+\infty$. This model implies that the probability of observing $S_i = j$, $j = 1, \ldots, 4$, is estimated as a linear function of the independent variables and the set of thresholds:

$$\Pr(S_i = j) = \Pr(c_{j-1} \leq \alpha W_i + \beta \sum_{k=1}^{7} b_{ki} + \gamma Z_i + \delta D_j + \epsilon_i < c_j) \qquad (15)$$

$$= \Lambda(c_j - \alpha W_i - \beta \sum_{k=1}^{\bar{t}} b_{ki} - \gamma Z_i - \delta D_j)$$

$$-\Lambda(c_{j-1} - \alpha W_i - \beta \sum_{k=1}^{\bar{t}} b_{ki} - \gamma Z_i - \delta D_j) \qquad (16)$$

where $\Lambda$ is the logistic cumulative distribution and where the four categories for the dependent variable are from the highest to the lowest level of satisfaction: "very satisfied", "fairly satisfied", "fairly dissatisfied", "very dissatisfied"+. In particular, the marginal impact of changes in the regressors on the probability that an individual is *fairly* or *very satisfied* is:

$$\frac{\partial \Pr(S_i = 3 \cup S_i = 4)}{\partial X_m} = \Lambda(aX - c_2) - [1 - \Lambda(aX - c_2)]\beta_m. \qquad (17)$$

where $X \in (W, b_k, Z, D)$.

Along with cash-wages and fringe benefits received at the work place, utility from working is likely to depend on personal-specific and job-specific characteristics. This justifies the inclusion in the regression of a number of individual and job controls. The first set of variables entered in the regression through $Z$ were education, which raises aspiration, occupation, age, race, gender, and location. The second set of individual controls considered the role of household structure and includes variables indicating marriage, the number of young children and adults in the household, and the financial necessity of working, measured through other labour income and constructed as the difference between total household income and the respondent's labour income from his main job. On the job side, dummies for the type of industry, wage arrears, labour hoarding, the frequency of conflicts between the collective of workers and the employers or among workers, the firm's size and its type of ownership (private, state, quasi-state), and whether the firm is effectively controlled by the collective of workers were used as controls for working conditions. Lastly, job security and the potential role of local labour market conditions in influencing quits were also taken into account, the expected impact here being that job satisfaction increases when the expectation of being laid off falls and when the likelihood of rapidely finding another job rises.

# 6 Results of estimation

## 6.1 The determinants of access to enterprise welfare

Table 9 displays the logit estimated coefficients of equation (12) with their t-statistics in parentheses beneath. Six different equations were performed for each sample benefit and the values of the pseudo R-squared and the percentage of correctly predicted values show that not all the specifications are comparable in terms of goodness of fit: access to housing, recreation centres, subsidised goods and cheap meals are better explained than access to medical facilities, other welfare transfers, or training/education schemes. The variables shown to be significant in explaining the reduced form outcome for the fringe benefit equations are as follows: monthly wage in first job and its square, wage arrears (a dummy equal to one if respondent's wage was not paid completely or on time), age, the number of adults and children in the household, education (5 categories), and occupation (5 groups). As well as control for individual characteristics, firm specific effects were captured through the inclusion of the size of establishment (3 categories) and the governance structure (5 groups). Additional explanatory variables control for sectoral disparities (5 groups), the type of settlement (rural, urban, Moscow - St-Petersburg), and regional effects (gathered in 4 macro-regions).

To aid the interpretation of the logit outcomes, the changes in the predicted probabilities for dummies were computed at average values of all the other explanatory variables. The models were also used to generate wage elasticity estimates at the average values of wage for the whole sample and for two sub-samples corresponding to the subset of individuals lying in the first and the fourth wage quartile respectively. Table 9 presents these elasticities and the most interesting results are discussed below.

### 6.1.1 The impact of personal characteristics

The individual's age is negatively associated with access to housing, subsidised goods, and education/training schemes. The results for housing and training are as expected, while a positive coefficient could have been expected for subsidised goods to reflect a form of return for the longer

expected rate of job tenure among older workers. Access to medical facilities and health care, in turn, were not related to age, while provision of such benefits might have attracted older workers. Provision of cheap meals and other welfare transfers were also equally distributed among different age groups of workers. Similarly, the fear that female employees may have been discriminated against, especially given their higher probability to use medical services, seems unfounded. More generally, contrary to cash wages[22], the data exhibits no significant differences in the distribution of employee benefits among women and men.

The number of adults and young children in the household was expected to play a significant role in access to social benefits, because, as discussed earlier, they may affect both employee and employer preferences. This prediction is correct with respect to access to cheap meals and housing. The size of household (adults and children age 15 or less) increased significantly the probability of receiving cheap meals, highlighting a form of social criteria in allocation of cheap meals as well as the fact that the whole family seems to have access to this benefit at the work place. Provision of housing is in turn negatively associated with the number of adults (young households receiving housing accommodation are less likely to share a flat with their parents) and positively affected by the number of children age 15 or less. It is worth recalling here that divestiture of enterprise housing was further advanced in 1994, the vast bulk of housing having been privatised or transferred to municipalities. Hence, the positive impact of the number of children on housing may indicate that the very small fraction of the population that continue to be housed by their enterprise may be actually a very specific and targeted group.

The effect of dummies controlling for education is examined relative to secondary education and shows that there are no returns to schooling in fringe benefits. For other welfare transfers in-kind, having a higher education even decreases the predicted probability of access by nearly 2%. This confirms the presumption that fringe benefits, contrary to money rewards, are provided regardless of the level of education, thus reducing the differentials in labour compensation between educated and less-educated workers.

[22]Newell and Reilly [34] found that on average in 1992 men in Russia earned 46% more than women as a monthly wage.

### 6.1.2 Effects of wage and wage arrears

Controlling for other factors correlated with wages which could also affect access to enterprise welfare, recreation centres, cheap meals, subsidised goods and other welfare transfers were all concave in wage with similar estimates for the recreation and the meals equation. The inclusion of the quadratic term was accepted at less than the 5% level in all equations. Provision of these benefits are estimated to peak at values above the fourth wage quartile: 960 thousand roubles for recreation centres, 1033 for meals, 705 for subsidised goods, and 594 for other welfare transfers in-kind. This finding could help to explain the considerable dispersion in access to benefits observed by wage quartile in Table 5. It seems that up to a certain extent, only employees in well paid firms continue to have access to fringe benefits. In turn, the negative coefficient on wage squared may support the compensating wage hypothesis, but only in the upper tail of the wage distribution and for a small fraction of the sample population, presumably in new private and informal sectors. Social coverage from enterprises seems to act therefore much more as a factor in widening differences in the distribution of income than in narrowing them. The wage elasticities and the wage effects on the predicted probabilities are reported in Table 9. The estimates for the elasticities indicate that at the average value of wage and all the other variables, a one point increase in wage leads to an estimated 0.42 to 0.66 increase in the probabilities of access to recreation centres, cheap meals, subsidised goods, and other welfare transfers in-kind. Moreover, holding other variables constant, an increase in wage from the first quartile to the third quartile increases the predicted probabilities for these benefits by 1% to 5%.

Two important benefits, however, like housing and medical facilities, were not at all related to wage. The insignificance for housing may be a result of the small number of observations. The finding for medical facilities is more interesting, especially when compared to the result for access to recreation centres. Firms traditionally owned the assets used to provide these benefits, but only well paid employees - presumably those working in well paid formerly state owned enterprises - continue to have access to recreation centres for adults and children, while in low paid firms, holiday homes and resort facilities may have been either closed or divested[23]. In contrast, access to health care seems to have remai-

[23]Mikhalev [32] reports that in some cases, access to recreation centres is now charged for at full cost.

ned universal. The pressure on firms to cut labour costs and to divest themselves of social assets has apparently affected medical facilities less severely, which could indicate stronger preferences among employers for the retention of medical facilities at the work place.

The impact of the dummy for wage arrears differs significantly according to the type of benefits and is consistent with two opposite expected effects. On the one hand, wage arrears reduce the probability of access to recreation centres (-3%), medical services (-3.5%), cheap meals, (-6%), and other welfare transfers in-kind (-9%), presumably as a result of the negative profitability effect included when reporting delays and non-payment of wages. On the other hand, wage arrears were not significant in explaining access to subsidised goods, for which the negative profitability effect may well be offset by the incentive to substitute cash payments into consumption goods. These estimates suggest that those benefits for which the negative profitability effect dominates over the substitution effect could be rapidly withdrawn if the financial situation of the firms that provide them does not improve. Alternatively, and as observed in the World Bank enterprise survey cited earlier, firms may well have strong incentives to provide various goods when these are close substituts for cash wages.

### 6.1.3 Effects of job occupation

The impact of occupation on access to enterprise welfare is evaluated relative to skilled and unskilled workers, as no significant differences were found between the two categories. Controlling for other factors, being a top or middle manager increases significantly the probability of access to housing by 2%, access to recreation centres by 8%, and surprisingly, access to other welfare transfers in-kind by 10%. Professionals with a non technical profile also benefit by an estimated 2% increase in the probability of access to housing, while there are no significant differences among the other occupational categories. The positive returns observed mainly for managers tends to verify the presumption that managers have profited personally from the economic independence granted by the new status of their enterprises, whether state owned or privatised[24]. However,

[24] The problem about transparency in criteria for allocating social benefits is not new: two surveys in the Altai district in 1982 and 1985 showed that only 7.7% of the members of the nomenklatura had housing problems in contrast with 40% of pensioners and 70% of families [44].

variation in access to enterprise benefits among workers with respect to position in the firm's structure of power is not observed for social support like medical facilities, cheap meals, and subsidised goods.

### 6.1.4 Impact of job characteristics

Sectoral effects are evaluated relative to the sector of industry, transport, and construction. The results indicate first that industrial workers are not better provided with work-related benefits. Further, it is interesting to note that only 3 years after the beginning of transition, the provision of enterprise benefits reflect very imperfectly the disparities between industries prevailing in the pre-reform period, in which workers in high priority sectors were better provided. For instance, access to housing is reduced by only 1% in health/education, while it is increased by 5% in agriculture, presumably because rural families may still be housed by the collective farms. Second, it is worth noting that access to several benefits is markedly higher in the banking/insurance sector - a new and rapidly expanding area in the transition period. There, the probability of access to medical services is increased by 7%, cheap meals, by 12%, and training-education schemes, by 6%. The finding highlights both the positive impact on enterprise welfare of working in a profitable sector, and the fact that health care is provided even outside the old industries. However, in new sectors like banking and insurance, medical services received by the employees may take the form of contractual insurance contributions, purchased outside the firm as is the case in Western establishments, in contrast to old sectors, where firms may often own the hospital or polyclinic. Third, being employed in agriculture and trade/services/food distribution possesses statistically significant effects on access to subsidised goods and food. Relative to industry, the returns are nearly 15% to being employed in agriculture and 6% in the trade/services/food industries. This strengthens the presumption that firms may use their own production as a form of wage when it is possible and advantageous for them. Consequently, even with harder budget constraints, those firms will have no apparent reason to interrupt the provision of such benefits. Fourth, firm-investments in human capital in the form of training/education programs were relatively higher among employees in services (+1%), education/health (+7%), and banking/insurance (+6.5%).

With respect to other variables, the size of establishment has been

found to positively affect the access to recreation centres, medical facilities, and subsidised goods. Compared with small firms (less than 20 employees), employees in large firms (>500 employees) are more likely to gain access to recreation centres, health care, and subsidised goods by the same identical mark-up (4%). These results are as expected, since both recreation centres and medical facilities have generally required large fixed social expenditures that are better absorbed in large companies. Furthermore, the higher probability of access to subsidised goods in large establishments could reflect the greater ability of large enterprises to negotiate and obtain discount prices for many goods. The paradoxical finding is that the size effect was not significant for housing, but this could be explained by the fact that most large companies have already transferred their housing stock to municipalities.

Controlling for other factors, the governance structure does also affect differentially the access to various benefits. Compared to Russian employees in new private firms, workers in state lease and state joint stock companies are more likely to gain access to recreation centres (+9%), medical facilities (+6%), cheap meals (+5%), and subsidised goods (+8%). Workers in non-state joint stock enterprises are better provided with health care (+9%) and other welfare transfers in-kinds (+8%), while employees in firms sold to workers receive relatively more cheap meals (+8%). The findings for employees in state enterprises may partly be explained by an easy access to state subsidises. In addition, compared with new private firms, both state or privatised firms already possess the social infrastructures for providing social services. Hence the current private/state and quasi-state differential in social benefits may be an important source of increased inequality in access to social benefits at the work-place as the private sector grows during the transition. However, it is important to notice, first, that employees in new private firms seem to be compensated with higher cash wages[25], second, that evidence suggests that fringe benefits are not exclusively observed in old sectors. A curious result is that no significant differences were found between new private companies and pure state owned enterprises. A possible explanation could be that the worst-off state firms, in which total labour compensation is lower than elsewhere are less likely to have been transformed in joint stock structure or even leased to external managers. Finally, another interesting finding is the insignificant coefficients

[25]The mean sample wage is 350,000 roubles in the new private sector and 195,000 in the other sectors.

on the dummy representing working in a firm where the effective control belongs to the collective of workers. This is possibly because employee bargaining power has in practice little impact on the distribution of social reward when objective factors such as profitability make the supply of fringe benefits impossible. It could also mean that the collective of workers would prefer to push up cash-wages, than non-wage benefits.

It is also worth noticing that while employees in state lease and state joint stock companies are more likely to have access to recreation centres, medical services, cheap meals, and subsidised goods, the mark-up disappears in privatised firms, except for health care and cheap meals. Although it is difficult to reach any strong conclusions with cross-section data, this result may indicate that the privatisation of the firm could have had a different impact according to the type of benefits. The fact that medical facilities, contrary to other benefits, are still more likely to be received by employees in privatised firms is not trivial and may again reflect stronger preferences of both employees and employers for retaining these benefits at the work place.

### 6.1.5 Geographical disparities

Residing in a rural or urban area is measured relative to living in Moscow or St-Petersburg. The coefficient on the urban dummy is positive and significant for access to recreation centres, with a mark-up near 4%. In addition, and as expected, living in a rural area, where the extent of the barter economy is larger, increases the probability of having access to subsidised goods by more than 8%.

Regional effects were also found to be significant in all equations except for medical services and training/education, but there do not suggest dramatic regional variation in the distribution of enterprise benefits. The lowest coverage in terms of benefits is found in Siberia and Fareast, though the largest differential, observed for income support, does not exceed 5%. However, given the rapid process of decentralisation in progress, and the increasing potential gap in local authorities' financial capacity to take over the social role of firms during the transition, sharp regional disparities could emerge rapidly in the distribution of non-cash labour income.

## Table 9: Results of the logit regressions on fringe benefits

| Variables | Housing | Recreation centres | Medical facilities | Cheap meals | Subsidised goods | Training & education | Welfare transfers |
|---|---|---|---|---|---|---|---|
| **Income variables:** | | | | | | | |
| Monthly wage (in hundred thousand roubles) | | 0.442 | | 0.424 | 0.554 | 0.145 | 0.365 |
| | | (3.3) | | (3.5) | (3.5) | (3.2) | (2.7) |
| Wage square | | $-2.30.10^{-2}$ | | $-2.06.10^{-2}$ | $-4.11.10^{-2}$ | | $-3.09.10^{-2}$ |
| | | (2.1) | | (2.3) | (2.5) | | (2.2) |
| Other income | | | | $6.8.10^{-2}$ | | | |
| | | | | (2.2) | | | |
| Wage arrears | | -0.645 | -0.574 | -0.858 | | | -0.709 |
| | | (2.5) | (2.7) | (3.3) | | | (3.6) |
| **Personal characteristics:** | | | | | | | |
| Age | -0.057 | | | | -0.023 | -0.026 | |
| | (2.8) | | | | (2.2) | (2) | |
| Number of adults | -0.636 | | | 0.310 | | | |
| | (2.6) | | | (2.7) | | | |
| Number of children | 0.54 | | | 0.21 | | | |
| | (2.3) | | | (1.7) | | | |
| Primary education | | | | | | | 0.329 |
| | | | | | | | (0.4) |
| Technical education | | | | | | | -0.056 |
| | | | | | | | (0.2) |
| High technical education | | | | | | | -0.232 |
| | | | | | | | (0.8) |
| Graduate | | | | | | | -0.787 |
| | | | | | | | (2.3) |
| **Occupation:** | | | | | | | |
| Managers | 0.939 | 0.734 | | | | | 0.942 |
| | (1.8) | (2.1) | | | | | (2.7) |
| Technical professionals | -0.548 | -0.050 | | | | | 0.308 |
| | (0.7) | (0.1) | | | | | (0.8) |
| Non-technical professionals | 1.23 | 0.683 | | | | | 0.715 |
| | (1.9) | (1.5) | | | | | (1.5) |
| Technical office-workers | -0.116 | 0.303 | | | | | 0.525 |
| | (0.2) | (0.7) | | | | | (1.5) |
| Non-technical office-workers | -0.409 | -0.264 | | | | | 0.514 |
| | (0.5) | (0.5) | | | | | (1.5) |
| **Industries:** | | | | | | | |
| Agriculture | 1.37 | | -0.478 | 0.247 | 1.18 | -0.923 | -0.116 |
| | (2.6) | | (1.1) | (0.5) | (3.4) | (0.9) | (0.3) |
| Trade/Services | -0.606 | | 0.032 | -0.0443 | 1.28 | 1.06 | -0.384 |
| | (0.8) | | (0.08) | (1) | (3.8) | (2.2) | (1.2) |
| Health/Education | -1.15 | | 0.188 | 0.684 | -0.404 | 1.86 | -0.134 |
| | (1.7) | | (0.6) | (1.8) | (0.9) | (4.8) | (0.4) |
| Banking/insurance | 0.773 | | 0.872 | 1.33 | -0.121 | 1.85 | 0.719 |
| | (1) | | (1.7) | (2.6) | (0.1) | (3.1) | (1.4) |

Table 9: Continued

| Variables | Housing | Recreation centres | Medical facilities | Cheap meals | Subsidised goods | Training & education | Welfare transfers |
|---|---|---|---|---|---|---|---|
| **Enterprise characteristics:** | | | | | | | |
| Medium firm | | 0.392 | 0.473 | | 0.683 | 0.414 | -0.246 |
| | | (0.9) | (1.4) | | (2) | (1.1) | (1) |
| Large firm | | 0.912 | 0.680 | | 1.24 | 0.898 | -1.02 |
| | | (2) | (1.7) | | (3.2) | (1.9) | (3.1) |
| State enterprise | | -0.69 | 0.017 | -0.249 | -0.208 | | 0.026 |
| | | (1.6) | (0.01) | (0.5) | (0.5) | | (0.07) |
| Lease/Joint stock state enterprise | | 0.780 | 0.830 | 0.940 | 0.851 | | 0.382 |
| | | (1.8) | (1.8) | (2.1) | (2.1) | | (1) |
| Collective farm | | | 0.229 | -0.491 | 0.109 | | -0.06 |
| | | | (0.2) | (0.4) | (0.2) | | (0.1) |
| Worker controlled firm | | 0.088 | -0.571 | 1.16 | 0.201 | | 0.462 |
| | | (0.1) | (0.5) | (1.7) | (0.3) | | (0.8) |
| Non-state joint stock company | | 0.028 | 1.11 | 0.13 | 0.429 | | 0.772 |
| | | (0.05) | (2.11) | (0.20) | (0.84) | | (1.7) |
| **Geographical variables:** | | | | | | | |
| Rural resident | | 0.549 | | | 1.12 | | |
| | | (0.9) | | | (2.3) | | |
| Urban resident | | 0.893 | | | 0.172 | | |
| | | (1.8) | | | (0.4) | | |
| South | -1.22 | 0.149 | | -0.449 | 0.234 | | 0.210 |
| | (2) | (0.5) | | (1.4) | (0.8) | | (0.9) |
| Ural/Pre-Ural | -0.122 | -0.391 | | -0.394 | -0.349 | | 0.204 |
| | (0.3) | (1) | | (1.1) | (1.1) | | (0.8) |
| Sibiria/Fareast | -0.557 | -0.700 | | -0.784 | -0.517 | | -0.596 |
| | (1.1) | (1.9) | | (2.3) | (1.6) | | (2.2) |
| Pseudo R-square | 0.1627 | 0.1346 | 0.0484 | 0.1323 | 0.1468 | 0.096 | 0.092 |
| % of correctly positive predicted values | 100 | 100 | 0 | 40 | 75 | 0 | 50 |
| % of correctly negative predicted values | 97 | 93 | 91 | 93 | 91 | 95 | 88 |
| Number of observations | 1246 | 1246 | 1246 | 1246 | 1246 | 1246 | 1246 |

*Note: The dummy for Collective farm was omitted in the recreation centres equation because it contains no observation. The rejection of the other variables was jointly tested at the 5% level. The absolute values of t-statistics are reported in brackets.*

**Table 10: Wage elasticities**

| | Recreation centres | Cheap meals | Subsidised goods | Welfare transfers | Training& education |
|---|---|---|---|---|---|
| All employees ($\bar{w} = 206$) | 0.66 | 0.72 | 0.73 | 0.42 | 0.28 |
| First quartile ($\bar{w} = 62$) | 0.24 | 0.25 | 0.29 | 0.18 | 0.08 |
| Third quartile ($\bar{w} = 436$) | 0.91 | 1.11 | 0.79 | 0.34 | 0.59 |

*Note: The mean wages for the whole sample and in the first and third quartile are in thousands of roubles.*

**Table 11: Effect of changes in wage on predicted probabilities**

| | Recreation centres | Cheap meals | Subsidised goods | Welfare transfers | Training& education |
|---|---|---|---|---|---|
| $\hat{P}_{w=90}$ | 0.0492 | 0.050 | 0.0684 | 0.1073 | 0.0436 |
| $\hat{P}_{w=250}$ | 0.0805 | 0.0852 | 0.1138 | 0.1499 | 0.0539 |
| $\Delta\hat{P}$ | 0.0312 | 0.0352 | 0.0495 | 0.0426 | 0.010 |

*Note: Wages are in thousands of roubles and correspond respectively to the value of the first and the third quartile.*

## 6.2 Towards an explanation of job satisfaction

The second task of this paper was to explore the extent to which enterprise social services were important determinants of workers' well-being. Ordered logit estimates of the effect of pecuniary and nonpecuniary benefits on the reported level of job satisfaction are shown in Table 12 and shed some light on this issue. Almost all the variables entered in the equation are binary variables, except for wage, age, and the number of children and adults in the household. The change in the predicted probabilities of reporting a high or fairly high level of job satisfaction for the dummies was computed at the mean values of all the variables.

Wage has the expected positive effect on job satisfaction and does not contradicts the standard assumption that a worker's well-being depends on absolute income[26]. The sample wage elasticity computed from

[26]Relative earnings may become the main determinant of job satisfaction as soon as the average wage is higher than that required to reach a certain standard of living, as in Western countries. This is not the case in Russia which explain the fact that the absolute level of wage appears highly significant.

the model relates to the probability of reporting a high or fairly high level of job satisfaction[27] and the estimate at the mean values of all the variables indicates that an increase of one point in wages yields to an increase of 0.41 point in the predicted probability.

Turning to the impact of fringe benefits, the coefficients are all highly significant exept for meals and have the expected signs. As reported in table 13, access to recreation centres raises the predicted probability by 30%; other welfare transfers in-kind, 28%; subsidised goods, 22%; training and education, 20%; medical facilities, 19%; and housing, 13%. Given the depressed level of household income in Russia, the stronger preferences among employees for recreation centres could be due to the fact that average workers and their families are unable to gain access to holiday homes other than those held by their enterprise. In turn, enterprise medical facilities and enterprise housing could be less valued by workers since, with their families, they can generally go to hospitals ran by the city health administration[28] or receive housing from municipal authorities, thus being less dependent on these benefits.

In order to compare the contribution of cash with in-kind transfers in generating utility, I computed the predicted values of wage that would yield, holding other variables at their mean values, the same probability of reporting a high or fairly high level of job satisfaction generated by receiving the different sample enterprise benefits. The estimates are also presented in table 13 and indicate that the monetary transfers necessary to compensate for the provision of benefits, in terms of job satisfaction, are very high. For instance, to keep the average worker's utility constant[29], the average wage should be increased by 4.3 to compensate the access to medical facilities, and by 5.7 for holiday homes. These estimates suggest that unless compensated by large increases in cash-wages, and if not just transferred to local authorities with a neutral impact on individuals, the interruption of social services from the enterprise could reduce significantly the standards of living for many workers.

Finally, there are a number of interesting correlations between job

[27] The wage elasticity was computed as $\frac{\partial P/P}{\partial w/w}$ where $\hat{P} = 1/(1 + e^{(\bar{X}\beta - c_2)})$.

[28] However, this would not be the case in company towns.

[29] In the sense of having the same predicted probability of reporting a fairly or very high level of satisfaction.

satisfaction and individual and job controls that I briefly summarize here. Less educated workers, with possibly less aspirations, were more satisfied, and so were the individuals with a vocational diploma. Compared with unskilled workers, occupational dummies other than non-technical office workers do also affect positively utility from work, possibly because more skilled workers also face more job opportunities. The estimates from the variables controlling for job attributes are more impressive. Job satisfaction is negatively correlated with the presence of frequent conflicts among the collective of workers, and also with wage arrears. Individuals working in small establishments are more satisfied than those in medium or large firms. Interestingly, being employed in the new private sector and in a firm controlled by a collective of workers has a large and well-defined positive effect on job satisfaction. The inclusion of the occupational dummies drives labour hoarding to insignificance, presumably because unskilled and at the same time less satisfied workers are more likely to have been on unpaid leave. Lastly, the potential role of job security has the expected impact. The expectation of being laid off has a strong negative effect and the inclusion of this dummy variable decreases sharply the significance of the gender dummy, suggesting that the lower level of job satisfaction among women can partly be attributed to their higher expected probability of being laid off. But the data still give statistical credence to a small gender gap in the level of happiness at work, even when controlling for individual and job characteristics.[30]

[30] In order to test the judiciousness of two separate specifications, one for men and one for women, I estimated a general model for the whole sample. Apart from the explanatory variables, this unrestricted model included a dummy for gender and all the interaction terms between these variables and the dummy for sex. A restricted model was then estimated, excluding all the terms that account for sex differentiation. A likelihood ratio test was then performed and the null hypothesis that all the coefficients of the interaction terms equal zero could not be rejected at any significance level below 12%.

**Table 12: Ordered logit estimates for job satisfaction**

| Variables | Coefficients ($\beta$) | t-Statistics ($t$) |
|---|---|---|
| **Labour compensation:** | | |
| Wage (Hundred thousands roubles) | 0.225 | 6.75 |
| Fringe benefits: | | |
| Housing | 1.37 | 3.9 |
| Recreation centres | 1.237 | 5.3 |
| Medical facilities | 0.601 | 2.9 |
| Cheap meals | 0.340 | 1.5 |
| Subsidised goods | 1.067 | 5.3 |
| Training/Education | 0.650 | 2.6 |
| Other welfare transfers | 1.551 | 8.7 |
| **Job controls:** | | |
| Wage arrears | -.381 | 3.0 |
| Labour hoarding | -0.395 | 1.4 |
| Conflicts with employers | -0.564 | 1.3 |
| Conflicts among employees | -0.827 | 2.3 |
| Employee power | 0.413 | 2.0 |
| Ownership structure: | | |
| Privatised enterprise | 0.109 | 0.5 |
| Private enterprise | 0.920 | 2.9 |
| Size of establishment: | | |
| Medium firm | -0.308 | 1.8 |
| Large firm | -0.378 | 1.8 |
| Dummy industries: | | |
| Agriculture | 0.244 | 1.0 |
| Trade, Service | 0.260 | 1.3 |
| Health, Education | -0.175 | 0.4 |
| Banking, Insurance | 0.11 | 0.3 |
| **Individual controls:** | | |
| Female employee | -0.237 | 1.9 |
| Age | -0.007 | 1.3 |
| Slavic | -0.120 | 0.6 |
| Educational dummies: | | |
| Primary education | 1.493 | 2.8 |
| Technical school | 0.087 | 0.4 |
| Vocational | 0.280 | 1.6 |
| Graduate | 0.081 | 0.4 |
| Size of settlement: | | |
| Rural resident | 0.218 | 0.9 |
| Small city | 0.539 | 2.5 |
| Big city | 0.121 | 0.5 |

Table 12: Continued

| Variables | Coefficients ($\beta$) | t-Statistics ($t$) |
|---|---|---|
| **Occupational dummies:** | | |
| Managers | 0.710 | 3.2 |
| Technical professionals | 0.474 | 2.0 |
| Non-technical professionnals | 0.487 | 1.9 |
| Technical office-workers | 0.410 | 1.7 |
| Non-technical office-workers | 0.236 | 1.1 |
| Skilled-workers | 1.04 | 2.4 |
| **Household structure:** | | |
| Number of children | 0.048 | 0.7 |
| Number of adults | 0.097 | 1.6 |
| Other income (hundred thousands roubles) | 0.007 | 0.4 |
| Married | -0.238 | 0.9 |
| **Local labour market condition:** | | |
| Job opportunity | 0.202 | 1.6 |
| Unemployment expectation | -0.705 | 5.2 |
| Pseudo R-square | 0.1982 | |
| Number of observation | 1256 | |

Table 13: Impact of fringe benefits and equivalent transfer in cash

| | Housing | Recreation centres | Medical facilities | Subsidised goods | Training & education | Welfare transfers |
|---|---|---|---|---|---|---|
| [1] $\hat{P}_0$ | 0.116 | 0.099 | 0.102 | 0.090 | 0.109 | 0.084 |
| [2] $\hat{P}_1$ | 0.242 | 0.404 | 0.288 | 0.323 | 0.31.3 | 0.364 |
| [3] $\Delta\hat{P}$ | 0.125 | 0.304 | 0.185 | 0.224 | 0.204 | 0.279 |
| [4] $\hat{w}$ | 750 | 1180 | 880 | 980 | 950 | 1085 |
| [5] $\hat{w}/\bar{w}$ | 3.6 | 5.7 | 4.3 | 4.7 | 4.6 | 5.3 |

[1] *Predicted probabilities when the benefit is not received.* [2] *Predicted probabilities when the benefit is received.* [3] *Change in predicted probabilities.*
[4] *Estimated wages that provide the same* $\hat{P}_1$. [5] *Estimated wage on average wage.*

# 7 Conclusion

In this paper I dealt with the distribution of enterprise benefits among the working population in Russia and on their impact on individual's well being, as expressed in self-reported levels of job satisfaction. I used a representative sample of the population carried out in September 1994, three years after price liberalisation, and while the process of privatisation and divestiture of enterprise social assets was already taking place. To my knowledge, these issues have been barely investigated up to now, while in-kind transfers from enterprises, especially under conditions of

sharp inflation, remain at the time of the sample an important component of the working population's living standards. However, it is not difficult to point out a number of limitations of this empirical analysis. Our measures of social transfers from the enterprise are rather limited and suffer from a small sample size. Also, the information at the individual level remains weak: seniority and human capital differences have been approximated by quite crude proxies. Finally, the self-reported level of job satisfaction was measured on an ordinal scale, and may be subject to large measurement error.

Notwithstanding these limitations, the data presents some interesting insights into the access to enterprise welfare at the end of 1994. First, the magnitude of fringe benefits can be partly attributed to a form of Soviet legacy, reflected in the positive impact of working in large formerly state-owned firms. Second, the ability of retaining access to these benefits at the work place seems to depend significantly on the financial position of the firm the employees were working for. Third, Soviet legacy is only part of the story, and the observed distribution of enterprise benefits may reflect to some degree the structure of employee or employer preferences for various benefits. This could explain, for instance, why medical facilities and cheap meals were also provided in new private sectors such as banking and insurance, or why fringe benefits in the form of consumption goods were more concentrated in sectors where cash-wages can easily be substituted by the firm's production.

In terms of equity, the findings demonstrate the presence of great disparities among the type of benefits provided by firms and tend to highlight two pressing inequalities. First, the compensation hypothesis, according to which individuals accept less desirable working conditions in return for higher cash wages, seemed to hold only in the very top wage distribution, while low paid workers were in general also less well provided with fringe benefits. Thus, social transfers from firms seem to increase income inequalities rather than decreasing them. Second, access to several benefits was strongly related to the position of an individual in the firm's power structure, which raises the inherent problem of transparency in the allocation of enterprise support. However, inequalities in non-wage benefits were mainly attached to job characteristics and appeared to result much more from a form of economic segmentation between and within firms, due presumably to such factor as profitability and control position, rather than from a form of discrimination on

grounds of personal characteristics. On the other hand, access to basic social services at the work-place, such as medical care, was found to have remained fairly well equally distributed among the working population. At the same time, provision of enterprise housing and cheap meals was positively related with specific needs, such as the number of dependents.

In terms of individual's well being, the data provide evidence that the social services provided by firms, along with cash-wages, raise job satisfaction significantly. Also, the estimated raise in cash wages necessary to compensate, in terms of job satisfaction, for the absence of fringe benefits, are found to be considerable. Therefore, the low level of job satisfaction reported in the data may well be understood in the light of the sharp decline in both real wages and fringe benefits that occured in the last few years, while reflecting the difficulty of finding another job in the transition period that better fits individuals's preferences. Moreover, since large compensating wage increases are unlikely to occur in the current context, and while local authorities are not always willing to take over the social infrastructures held by firms, the cessation of social benefits from enterprises could alter considerably the living standards of the working population. Specifically, this raises the important question about the evolution of enterprise social coverage during the transition. This could be addressed in further research if access to similar data from different periods can be secured.

# References


[1] **ASSELBERGS G.; GURKOV I. (1995)**: " Ownership and control in Russian privatised companies: evidence from a survey ": *Communist Economies & Economic Transformation*. Vol 7, No. 2, 1995.

[2] **ATROSTIC B. (1982)**: " The demand for leisure and nonpecuniary job characteristics": *American Economic Review*, No 72, pp 428-40.

[3] **BARR N. (1984)**: *Labor markets and social policy in Central and Eastern Europe: The transition and beyond*: Oxford University Press.

[4] **BOEVA I., ROSE R., SHIRONIN V. (1993)**: "How Russian are coping with transition. New Russia Barometer II": *Studies in Public Policies* , No 216.

[5] **BONIN G., BROCHIER S. (1993)**: "Du pain et du lait pour la region de Voronej"; Master thesis.

[6] **BROWN C. (1980)**: " Equalizing differences in the labor market"; *Quarterly Journal of Economics*, February.

[7] **CAMERON A.; TRIVEDI P. (1986)**: " Econometric models based on count data: comparison and applications of some estimators and tests ";*Journal of Applied Econometrics*; Vol 1.

[8] **CLARK A. (1993)**: "Job satisfaction and gender"; *Discussion Paper Series*, No 415, University of Essex.

[9] **CLARK A.; OSWALD A. (1995)**: "Satisfaction and comparison income"; Forthcoming: *Journal of Public Economics*.

[10] **COMMANDER S.; JACKMAN R. (1993)**: " Providing social benefits in Russia: redefining the roles of firms and government "; *Policy Research Working Paper Series*; No 1184; September.

[11] **COMMANDER S.; SCHANKERMAN M. (1995)**: " Enterprise restructuring and the efficient provision of social benefits "; World Bank, mimeo.

[12] **COMMANDER S.; LEE U.; TOLSTOPIATENKO A. (1995)**: " Social benefits and the Russian industrial firms ": May: World Bank and Moscow State University.

[13] **COMMISSARIAT GENERAL DU PLAN (1994)**:*La protection social en Fédération de Russie*; Groupe de travail Franco-Russe No 3.

[14] **DE MONTLIBERT C. (1994)**: "Quelle protection sociale pour les Russes"; Russie, le decentralisation aux prises avec l'étatisme, Les Etudes de la Documentation Française.

[15] **EHRENBERG R., SMITH S. (1985)**:*Modern Labour Economics*; Glenview and London: Scott, Foresman and Company.

[16] **ENGLAND P.; FARKAS G. (1988)**:*Industries, firms, and jobs: Sociological and economic approaches*; New York and London: Plenum Press.

[17] **ESTRIN S.; SCHAFFER M.E.; SINGH I.J**: " The provision of social benefits in state-owned, privatized and private firms in Poland "; *Discussion paper*, No 223, February, Centre for Economic Performance, London School of Economics and Political Sciences.

[18] **FAJTH G.; LAKATOS J. (1995)**: " The transformation of employee benefits in Hungary ", Contribution to a round table on divestiture of social services from state-owned enterprises; *Economics of Transition*, Vol 3 (2), 1995.

[19] **FAJTH G.; LAKATOS J. (1994)**: " Fringe benefits in transition in Hungary "; paper prepared for the conference on Social Protection and the Enterprise in Transitional Economies; March, CEPR/Institute for Advanced Studies.

[20] **FREEMAN R. (1981)**: " The effect of unionism on fringe benefits"; *Industrial and Labor Relations Review*, Vol 34, No 4, pp 489-509.

[21] **FREEMAN R. (1978)**: "Job satisfaction as an economic variable";*American Economic Review*, Papers and Proceeding, No 68, pp 135-141.

[22] **GREEN W. (1993)**: *Econometric Analysis*; Second Edition; New York: Macmillan.

[23] **HART R. (1984)**: *The economics of non-labor costs*: London: George Allen & Unwin.

[24] **JACKMAN R. (1995)**: " Efficiency considerations in enterprise provision of social benefits ". Contribution to a round table on divestiture of social services from state-owned enterprises:*Economics of Transition*, Vol 3 (2), 1995.

[25] **KLUGMAN J.; MARNIE S.; MICKLEWRIGHT J.; O'KEEFE P. (1995)**: " Enterprise divestiture of kindergartens and childcare arrangements in Central Asia ": European University Institue, mimeo.

[26] **LEFEVRE C. (1994)**: " Le rôle social des entreprises industrielles en Russie "; *Courrier des pays de l'Est*, No 383, Octobre.

[27] **LESTER R. (1967)**: " Benefits as a prefered form of compensation"; *Southern Economic Journal*, April, pp 486-95.

[28] **LEVY-GARBOUA L., MONTMARQUETTE C. (1994)**: "On reported job satisfaction: a test of subjective well-being models and a new interpretation": University of Paris and Montréal, mimeo.

[29] **LUCAS R. (1977)**: "Hedonic wage equations and psychic wages in the returns to schooling": *American Economic Review*, No 67, pp 541-58.

[30] **MCALLISTER I.; ROSE R. (1993)**: "Is money the measure of welfare in Russia?":Glasgow: U. of Strathclyde, *Studies in Public Policies*, No 215.

[31] **MCAULEY A. (1994)**: " Social welfare in transition: what happened in Russia ": Research Paper Series, No 6, January, World Bank.

[32] **MIKHALEV V. (1995)**: "Obekti zdravokhranenia i otdicha predpriati v sloviakh perestroiki rossiskoi promichlenosti"; mimeo.

[33] **NEALEY S. (1963)** " Pay and benefit preference": *Industrial Relations*, No 3, pp 17-28.

[34] **NEWELL A.; REILLY B. (1995)**: " The gender wage gap in Russia ": mimeo.

[35] **OECD (1994)**: " Current labour market problems in Russia ": CCET. OECD. Paris.

[36] **OECD (1995)**: " Wage formation during the period of economic restructuring in the Russian Federation ": CCET. OECD. Paris.

[37] **PLANOVSKY J.; WÖRGÖTTER A. (1994)**: " Social protection in the Enterprise: the case of Slovakia ": paper prepared for the conference on Social Protection and the Enterprise in Transitional Economies; March. CEPR/Institute for Advanced Studies.

[38] **REIN M.; TRATCH I.; WÖERGÖTTER A. (1995)**: " Social assets. privatisation and industrial restructuring in Ukraine ". Contribution to a round table on divestiture of social services from state-owned enterprises; *Economics of Transition*. Vol 3 (2). 1995.

[39] **REIN M.; TRATCH I.; WÖERGÖTTER A. (1995)**: "Social services of enterprises in selected Russian Region": Institute for Advanced Studies. Vienna. Mimeo.

[40] **ROSE R. (1994)**: "What is the value of fringe benefits in Russia?":Glasgow: U. of Strathclyde. *Studies in Public Policies*. No 225.

[41] **SCHAFFER M. (1995)**: " Should we be concerned about the provision of social benefits by firms in transition economies?". Contribution to a round table on divestiture of social services from state-owned enterprises; *Economics of Transition*. Vol 3 (2). 1995.

[42] **SCHOKKERT E.; VAN DE VOORDE C. (1990)**: "Earnings and job satisfaction of public and private sector economists"; *Discussion Paper*. No 12. Katholieke Universiteit Leuven. Centrum Voor Economische Studien.

[43] **SOKOLOFF G., PASCALIS M., BERELOWITCH A. (1994)**: "Audit social de ZIL"; Union Europeènne de CIC-SEDEM. mimeo.

[44] **TAYLOR M. (1991)**: " Non-wage labour costs in the USSR and the role of trade unions":*In search of flexibility: The new Soviet labour market*. Guy Standing Ed.

[45] **WORLD BANK (1995)**: *Poverty in Russia: an assessment.*

[46] **WOODBURY A. (1983)**: " Substitution between wage and non-wage benefits": *American Economic Review*. No 73. pp 166-82.

[47] **ZU-LIU HU (1994)**: " Social protection. labor market rigidity. and enterprise restructuring in China ": *Paper on policy analysis and assessment*. No 22. October. IMF.

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